

US PATENT OFFICE SPECIFICATION, PROFESSIONAL COLLABORATION NETWORKS - RAJASINGHAM, MARCH 2003

**PATENT APPLICANT**

A.I.Rajasingham, 6024 Bradley Boulevard, Bethesda, MD 20817

**TITLE OF INVENTION:** Professional Collaboration Networks

**CROSS REFERENCE TO RELATED APPLICATIONS:** US 60/450,682

**STATEMENT REGARDING**

**FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT:** Not Applicable

**REFERENCE TO A MICRO FICHE APPENDIX:** Not Applicable

**BACKGROUND OF INVENTION**

**FIELD OF INVENTION**

Generation of entities to create economic value as in corporations, represent the aggregation of complementary skills and visions that create products that are expected to have a value to a set of markets that is greater than the cost of the utilization of all of the constituent participants and the resources brought to bear on the products. In the past these entities were largely created by manual searches for suitable candidates in each functional area and industry area required for the product by entrepreneurs who used largely informal networks for this process.

The present invention creates a new paradigm for the creation of economic value generating entities by using Trust networks and Professional Networks. In many embodiments of the invention, these Trust and Professional networks are created by aspects of the invention.

**SUMMARY**

**OBJECTS & ADVANTAGES**

The objects and advantages of the present invention relate to the creation of entities that can generate economic value by utilizing the structure and content of communications among members of networks that are created both for social and professional interaction. Such economic value in the present invention may for example relate to the creation of business entities or a

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1 new approach for matching job seekers to job offerings with information in normal interactions  
2 between members on one or more networks. The invention defines a new approach to creating the  
3 environment for such communications and also provides a process that uses existing networks as inputs  
4 for the process.

**BRIEF DESCRIPTION OF DRAWINGS**

5  
6 Figures 1-35 provide slides that represent the process for building an exaple of the present  
7 invention.

8 Fig 3, illustrates possible layers in networks.

9 Fig 4, illustrates the formation of a Trust layer based on personal communications. Forums  
10 are usually social networks.

11 Fig 5, shows an example of a screen where the personal postings can be made in a Trust  
12 network of choice. If Trust Network is outside the PCN a fee can be charged by outside network for information  
13 on postings.

14 Fig 6 shows a Professional layer where reputations are generated with postings.

15 Fig 7 shows routine professional postings that can indicate specialty or field and sub field.  
16 Fees can be due for postings that solve problems posted by originators. Postings generat a reputation.

17 Fig 8 Shows a visualization of a posting that has components in multiple fields that make it  
18 easy for members to choose to respond to the field profiles that they have competence in.

19 Fig9 Shows first level responses to the postings n Fig 8. They could each have different  
20 components in different fields.

21 Fig 10, A second respondent could have still different components of his/her response,  
22 therefore beginning to create a trajectory of field strengths along thread.

23 Fig 11, is a representation of multiple threads that can evolve from a first post each with  
24 different field strengths at each step. The Threads that end could have high information content of the poster.

25 Fig 12, shows that a single member canbe in many PCNs

26 Fig 14, shows an Entrepreneur/originator/contract writer defining contracts and  
27 broadcasting needs for legal structure for example

28 Fig 15, example fo what could be secified by the originator/contract writer.

29 Fig 17, the next step in creating a venture would be to get people that will have the right  
30 profiles

31 Fig 18, example of professional requirements

32 Fig 19, Bids back to the entrepreneur/originator/contract writer.

33 Fig 20, Choiec screen for bids

34 Fig 22, trust /diligence process begins

35 Fig 23, Trust layer for diligence. References (possibly for a fee) for multiple levels  
36 chaining back along several links to the Originator/Entrepreneur/Contract Writer creating a complete connection  
37 thread. And then chaining forward on complete connection threads.

38 Fig 24, Professional Evaluation. See Fig 8,9,10 for cross reference.

39 Fig 25, Professional Evaluation with externa; experts.

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Fig 26, Referee competence example of representation.

Fig 28, Action of the originator to respond to bids

Fig 30, PCN for using diligence information for raising capital

Fig 31, The PCN screens for a VC or investor.

Fig 34,35 Examples of implementation aspects.

**DETAILED DESCRIPTION OF INVENTION**

The present invention either uses a preexisting professional community or creates one or more such communities using the specialization and preferences of the members. These networks can result from professional organizations such as professional societies such as IEEE or Colleges and classmates in particular fields, Alumni of colleges, colleagues in profitable organizations, university staff and faculty etc. This forms the professional layer of the communities. There is in addition a Trust layer of the community that is created by the interaction of members of one or more networks that relate to personal relationships from prior or current contact in organizations or physical locations such as colleges, universities, alumni groups, companies, professional organizations, schools etc. The Trust Layer (TL) and the Professional Layer (PL) are parts of the Professional Collaboration Network (PCN)

The classification of the members into functional areas relevant for economic activity and industry groupings relevant for creating economic value is done to help focus dialog in the professional networks. Similarly the Trust networks get focus by segmentation in to the relevant groups that are interested in a dialog. For example class groups in an alumni Egroup.

The professional networks may have a range of classification mechanisms for the threads of discussion and dialog that flows through the network. One example would be an item for posting in the professional network be classified by the originator to have a components in one or more industry field and at least one functional area that is relevant for the posting. As responses are generated to the initial posting, respondents are allowed to provide new combinations of the industry weightings for the response and the functional area if different to the original posting. This will allow a tree of responses to develop where any branch of the tree may have a particular industry orientation with more industry specialists targeting a response. The model can have fees for responses to the postings made by the PCN and partly paid to respondents. However, this may not be necessary as, another model can use the desire of the participants to create a reputation to drive their interest providing inputs. The originator may provide inputs on the relevance of the responses in resolving the issue originally posted.

These professional networks keep functioning to address specific queries of members and may have economics of their own in providing incentives for respondents. However, in addition they create a record of competence for each of the participants. This record can take many forms depending on the structure that is created for the interaction and the definition of the threads of

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1 discussion. Some examples are provided in the figures but they are by no means complete in terms of  
2 such structures. When a new venture or other entity is contemplated by an entrepreneur or even a  
3 existing entity that has job vacancies, such professional networks can be queried to provide the  
4 competence record of the members.

5 In the past such "references" came from a forward search among individuals  
6 known to the originator of the search. Then to take advantage of the economies of scale in the  
7 relationships in each field search firms were set up to use relationships that can be reused for new  
8 relationships. Such search firms manifested themselves to some extent in Venture Capital Companies  
9 that used relationships in their data banks to create economic value over and above the capital they  
10 provided. The present invention provides a more powerful paradigm as both forward and backward  
11 searches may be conducted in the networks and the infrastructure for transactions may even be designed  
12 to provide the right parameters for measuring the performance of members when there is a search of a  
13 new business entity conducted by an entrepreneur or a job posting for a company.

14 In a similar vein there is a need for trust relationships or "personal references"  
15 for generating new relationships in a business venture or for that matter in hiring decisions. The  
16 structure of interactions in networks can be harnessed to provide key information in terms of the  
17 relative strength of relationships such as derived from the frequency of interaction between members or  
18 of interaction of members to groups that are responded to by other members. Such linkages can be  
19 connected to get out a set of relationships with the Entrepreneur or other searching party (E) and then a  
20 forward search from E conducted right through to the possibly several paths to the subjects of the  
21 search. There can also be information on the nature of the relationships in the networks that are made  
22 available.

23 There is an issue of intrusion into privacy of the members. However, there can be  
24 disclaimers designed for members on entry to allow such information to facilitate such processes that  
25 such members can be beneficiaries of. For example, they could be paid by the PCN for allowing their  
26 interactions to be used in a search.

27  
28  
29 The above structure can be used as noted in a passive manner for a record of past actions of members of the PCN  
30 to provide inputs in a search. In addition there can be active interactions of members on request by the PCN for  
31 additional information or economic exchange. For example there can be referees at different levels as shown in  
32 the figures for both the TL and the PL that can be paid by the PCN or another agent through the PCN. In  
33 addition members who are knowledgeable about performance of members in a search may choose to provide  
34 performance guarantees to the searching party through the PCN thereby providing greater confidence to the E.  
35 Often such guarantees are more credible if underwritten by a credible financial institution. Such arrangements  
36 and the guarantee arrangements along with legally binding agreements in the relevant jurisdictions and locations  
37 of the members for all economic transactions may be generated and executed by the PCN.  
38

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1 The process of creation of a new venture by an E may start with the PCN providing a forum of Intellectual  
2 Property legal firms that offer services to the PCN member (potentially for a fee to the PCN). The E can then  
3 decide on one of these and then set up the IP requirements before creating a legal entity for operating the venture  
4 (such as a corporation or LLC etc). Again this can be done through a set of legal entities that provide such set up  
5 services in different jurisdictions available on the PCN (potentially for a fee to the PCN). Once the business plan  
6 is created by E (again resources for this can be provided through sets of consultants who execute non disclosures  
7 and operate through PCN for a fee as in the last two steps), there is a need to find members of a team for the  
8 venture. The PCN provides the channels for posting requirements, bidding for the process and providing the  
9 diligence and then finalizing the arrangements (all for a fee which can include equity in the entity, wage based  
10 compensation or other claims on the economic value created by the transaction)

11 Initially the E posts the requirements for each participant in the intersection of the relevant industries and the  
12 relevant functional areas. Reservation equity or wages or other terms may be provided to be explicit or available  
13 only on meeting the conditions for reservation being met. The respondents bid with identities and any additional  
14 information they wish to provide and granting permission if they choose to allow E to go through a diligence  
15 process on PCN.

16 The E then may go through both a Trust evaluation and a Professional evaluation of the candidates. One or more  
17 Trust Layers (TL) that the respondent is a member are notified of the member's interest and references are  
18 solicited. Such referees are backward chained to second, third and higher level references till a known or trusted  
19 party is found as a referee at some nth level trusted by the E. This will then permit a forward chaining of  
20 verification of trust relationships in the paths to the respondent from the E. All members connected together by a  
21 chain of linkages between pairs of members are part of a connected network. Every unique path along linkages  
22 between pairs of members with no linkage traversed twice is a connection thread.

23 A parallel channel would be the utilization of the strength of communication relationships which may be  
24 established with the frequency of communication between members or other criterion related to the strength of  
25 relationships between members. Such communications may be backward chained till the E is reached and then  
26 then the E may choose to forward chain to verify the subject through the network. Notably, the communication  
27 network may be based on direct communications or communications to a sub network of any of the TLs and the  
28 response of other members to that communication.

29 Guarantees may also be provided for a fee with specific defined criteria that are triggers for payment.

30  
31 Similarly the diligence process for Professional performance may be conducted with the E viewing (potentially  
32 for a fee) a communications distribution of the subject in the space of industries and the space of functional areas.  
33 He may click or otherwise select a point or a region of the space to investigate the competence of the subject.  
34 Such a selection may give the postings that the subject has made in the local neighborhood of the selection (the  
35 E can choose the size of the neighborhood) these postings will be classified in terms of the functional focus and  
36 industry focus and the context of each of these in terms of the trajectory of the prior and following postings in the  
37 thread in these spaces. It may also give the position on the tree of communications following the initial posting  
38 for each of these communications, to establish the relevance (early termination of a tree may be because an  
39 answer has been reached or because the branch has become irrelevant).

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1 Further more the E can broadcast a request for referees that inhabit the neighborhoods that E has selected to  
2 provide references on the subject. PCN can provide a network of experts to evaluate the referees remarks or the  
3 subject.(for a fee. The experts may also be paid by PCN or be retained simply by generating a reputation for  
4 themselves) The bidder/subject will normally be informed of the request for references and the referees identities  
5 and be allowed to provide a perspective on that referee either positive or negative that is available to the E when  
6 evaluating the referee inputs.

7 There can be 2<sup>nd</sup> 3<sup>rd</sup> or higher order referees which can be evaluated by E or by experts. It is also possible to have  
8 first order referees to stay anonymous as long as they provide second order referees that evaluate them to  
9 disclose their identities. This arguen tmay be carried to multiple levels of anonymous referees.

10 There may also be a background process for establishing the reputation of referees in providing accurate inputs  
11 by correlating the positive references to positive decisions by E or in the case of multiple level referees the next  
12 higher level referee success in prediction (chained back from the success of the E)

13 Any of the referees can also provide guarantees as in the TL related to a specific predefined trigger criterion to  
14 help the E in a decision.

15 The E may then finalize decisions on the bidders and if necessary counter offer and receive responses any  
16 number of times through PCN and arrive at a decision possible after meeting with the bidders.

17 The PCN may get a fee based on economic value of the entity created that may be equity or other claim on the  
18 entity such as a senior claim as in preferred shares etc or simply contingent claims on performance

19  
20 The next step is to attract finance to the entity. Here again the PCN may have a forum of investors that may be  
21 Venture Capitalists or Angel investors etc. Upon request by E to the Financier, the Financier may initialize a  
22 diligence process on PCNs that he is a member of to check each of the participants. The process is analogous to  
23 the process conducted by E for theother participants.

24 PCN can charge a different fee for this service to capital providers.

25 A second factor for this stage of the process is that the E can use the information that he has got in the diligence  
26 process he has conducted to selectively present what he chooses to the financier.

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US PATENT OFFICE SPECIFICATION PROFESSIONAL COLLABORATION NETWORKS - RAJASINGHAM, MARCH 2003.**ABSTRACT OF DISCLOSURE:**

Methods and systems for making decisions and risk mitigation for professional contracts and related collaboration. The use of a Collaboration Network is used with one or more Trust Layers and Profesional layer to identify matches for collaboration separately on professional reputation and on integrity.

~~A business system generating and utilizing trust linkages and professional linkages between members for the synthesis of economic value in business entities.~~

## Claims

1[CURRENTLY AMENDED] A method for business decision support for creating a part of an economic organization comprising:

.identifying the professional elements of the required economic organization by an originator;

.venture for each of said elements accessing/evaluating human resources utilizing an information network with a plurality of members— a Professional Collaboration Network comprising entries of members including said originator, said Professional Collaboration Network comprising a:

at least one Professional Layer with common members with at least one Trust Layer;

.broadcasting the at least one Professional Layer comprising entries of communications between members of the Professional Layer, resulting in the accumulation of information on inferred professional competence wherein the professional ability of said members may be assessed using third party knowledge of said members;

.identifying at least one match and related bid for the professional element in the Professional Layer with the required Professional competence;

.querying the at least one Trust Layer of the Professional Collaboration Network comprising trust linkages representing trust measures, between members of the Professional Collaboration Network for said match;

.obtaining in response from the Professional Collaboration Network, communications from a set of members—first level trust members - that affirm a level of trust of the match;

.querying at least one Trust Layer of the Professional Collaboration Network comprising trust linkages affirming trust measures of said first level trust members, of the Professional Collaboration Network for each of said first level trust members;

.obtaining in response from the Professional Collaboration Network, communications from a set of members—second level trust members - that affirm a level of trust of the first level trust members for each of the first level trust members;

.iteratively as in the last two steps obtaining a chain of trust linkages with communications between corresponding  $n^{th}$  and  $(n+1)^{th}$  level trust members to



affirm a level of trust of the nth level trust member by the (n+1)<sup>th</sup> level trust member thereby building a connection thread;

terminating the iterations of the last step when a predetermined number -M- of trust members of level (n+1) or less are determined to be the originator thereby generating M complete connection threads;

computing one or more aggregate trust measures from the resulting M or less, iterative trust levels available to the originator;

originator selecting the preferred member for the professional element based on the bids, professional competence and trust measures of each match;

thereby providing a method for building an economic organization.

~~at least one Trust Layer with members, with linkages generated by dialog, thereby generating at least one connected network of members comprising pairs of connected members and each member of each of said connected networks of members being connected to every other member of said connected network through a series of pair-wise connections between members of said Trust Layer in said connected network, and wherein a unique path along said pair-wise linkages between any two of said members with any one pair-wise linkage traversed only once, is a connection thread;~~

~~a user of the decision support system, with access to said response histories of members of at least one of said Professional Layers and linkages between members of at least one of said Trust Layers, wherein said user evaluates an evaluated member wherein said evaluated member is a member of at least one of said Professional Layers and at least one of said Trust Networks;~~

~~thereby enabling the user of the decision support system to evaluate the professional reputation of said evaluated member using the response history of said evaluated member and references of members in a connected network to which said evaluated member belongs.~~

2. [CURRENTLY AMENDED] A method for business decision support for creating an economic organization~~venture~~ as in claim 1, wherein the PCN has multiple Trust Layers and wherein a strength of linkage in said trust network between pairs of members comprises at least one of the nature of, and the frequency of dialog between said pairs of members.

3. [CURRENTLY AMENDED] A method for business decision support for creating an economic organization~~venture~~ as in claim 1, wherein said Professional Layer comprises a method to assess the professional competences~~space of members by fields~~ is a Euclidean space with dimensions representing fields.

.creating a forum for interaction of the members and treads for each discussion topic;

.visually representing components of professional fields of members along multiple axes representing multiple field types, about an origin, wherein the distance from the origin represents the level of competence;

.visually representing each posting of each member on said forum with components of professional field content in the posting along multiple axes representing multiple field types, about an origin, wherein the distance from the origin represents the proportion of content in each relevant field;

.visually representing each response to a posting or another response of each member on said forum with components of professional field content in the posting along multiple axes representing multiple field types, about an origin, wherein the distance from the origin represents the proportion of content in each relevant field;

.thereby creating a tree of different field strength components with accumulated responses;

.accumulating the contributions of each member ;

.using the accumulated contributions of members to assess professional competence in any of the fields represented as dimensions.

4. [CURRENTLY AMENDED] A method for business decision support for creating an economic organization with a Professional Layer as in claim 3, wherein the termination of any branch of the tree from any thread provides information on the professional competence of the last contributor to the thread.

5. [CURRENTLY AMENDED] A method for business decision support for creating an economic organization venture as in claim 1, wherein said originator is a member references of a different Trust Layer members are from members with direct linkages to the Match..evaluated member.

6. [CURRENTLY AMENDED] 5. A method for business decision support for creating an economic venture as in claim 1,

~~wherein said user of said decision support system is a member of said Trust Layer and said Evaluated member and said user belong to the same connected network, and wherein said user references are generated by pair-wise evaluation along one or more connection threads of a reputation of each member along said connection thread from said user to the member of the connected network with a linkage to the Evaluated Member, in conjunction with the reference of the Evaluated Member.~~

6. A method for business decision support for creating an economic venture as in claim 1, wherein the Trust layer further comprises the (n+1)th level trust member offering a guarantee for the integrity of an n<sup>th</sup> level trust~~said reputation provided by a first member contingent on the n<sup>th</sup> level trust of a second member offering a guarantee for the integrity of an (n-1)<sup>th</sup> level trust member with a direct linkage along a connection thread is guaranteed thereby creating a reputation guarantee along a complete linkage, and each of the linkages in said connection thread, have reputation guarantees thereby creating a guaranteed connection thread.~~

7. [CURRENTLY AMENDED] A method for business decision support for creating an economic venture as in claim 6, wherein said connection thread extends from the originator to the match providing a continuous connection thread available to the originator for purchase.

~~wherein said guarantees are provided for a guarantee fee paid by the user.~~

8. [CURRENTLY AMENDED] A method for business decision support for creating an economic organization as in claim 1, wherein a fee is paid by the PCN for one or more trust measures obtained from members.

9. [CURRENTLY AMENDED] A method for business decision support for creating an economic organization~~venture as in claim 7, wherein a payout related to the guarantee fee is paid by each of said guarantors if the reference proves to be invalid.~~

~~9. A method for business decision support for creating an economic venture as in claim 8, wherein a financial institution underwrites one or more of said reputation guarantees.~~

10. [CURRENTLY AMENDED] A method for business decision support for creating an economic venture as in claim 1, further comprising a bidding system wherein said originator~~user may publish specifications for participation of one or more of said members and invite bids for participation and thereafter utilize the Trust Layer and the Professional Layer to evaluate prospects in the context of bids received.~~

11. [CANCEL]



12. [CURRENTLY AMENDED] A method for business decision support for creating an economic venture as in claim 1, wherein said Professional layer comprises experts who can evaluate a member and are members of at least one Trust layer.;

13. [NEW] A method for risk mitigation in a transaction between the writer of a contract and the proposed executor of the contract for an agreed compensation by:

.identifying a trust network wherein the writer of the contract and the executor of the contract are members and wherein in said trust network, each member of said trust network has at least one linkage representing trust between said member and another member in the trust network thereby creating trust linkages between pairs of members;

.querying the trust network comprising trust linkages, between members, to identify linkages to the proposed executor of the contract;

.obtaining in response from the trust network, communications from a set of members –first level trust members - that affirm a level of trust of the proposed executor of the contract;

.querying the trust network comprising trust linkages for affirming trust of said first level trust members, for each of said first level trust members;

.obtaining in response from the trust network, communications from a set of members –second level trust members - that affirm a level of trust of the first level trust members for each of the first level trust members;

.iteratively as in the last two steps obtaining at least one chain of trust linkages with communications between corresponding  $n^{th}$  and  $(n+1)^{th}$  level trust members to affirm a level of trust of the  $n^{th}$  level trust member by the  $(n+1)^{th}$  level trust member thereby building a connection thread;

.terminating the iterations of the last step when a predetermined number –M- of trust members of level  $(n+1)$  or less are determined to be the writer of the contract, thereby completing M complete connection threads of trust linkages between the proposed executor of the contract and the writer of the contract;

.sequentially query starting from the first trust level members and ending with the trust level member with a direct trust linkage to the writer of the contract along each identified connection thread, each trust level member in each connection thread to affirm interest in guaranteeing, for a fee, a level of performance on the contract, contingent on a guarantee on the level of performance on said contract by the preceding trust level member in the same connection thread, wherein the guarantee on the level of performance contingent on ;

.compile for the writer of the contract along each complete connection thread the cumulative conditional offered guarantees;

.thereby providing a method for mitigating risk in a transaction between members of the trust network.

14.[NEW] A method for risk mitigation in a transaction between the writer of a contract and the proposed executor of the contract for an agreed compensation as in claim 13, further comprising a third party offering a supplemental guarantee to at least one of the conditionally offered guarantees.

